

Application Serial No.: 10/710,870

Attorney Docket No.: 00131-00322-US1

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS

1. (Original) A method for fabricating a flip-chip semiconductor device having plural conductive polymer bumps thereon, the method comprising:
 - patterning and depositing metallized pads on a substrate;
 - photolithographically forming plural molds on the substrate using a photoresist, wherein the plural molds are in registration with the metallized pads;
 - filling each of the plural molds by applying a low-viscosity conductive polymer material; spinning the substrate to form a uniformly distributed conductive polymer layer;
 - baking the substrate, plural molds, and conductive polymer material to thicken any remaining conductive polymer material and evaporate any solvent in the conductive polymer layer;
 - polishing the conductive polymer layer to remove excess conductive polymer material from a surface of the photoresist;
 - stripping the plural molds to reveal the plural conductive polymer bumps; and
 - hardening the plural conductive polymer bumps by temperature curing.
2. (Original) The method of claim 1, wherein the photoresist is a negative resist.
3. (Original) The method of claim 1, wherein the photoresist is a positive resist.
4. (Original) The method of claim 1, further comprising, after polishing the conductive polymer layer, fine polishing the conductive polymer layer using a grid having a grain size smaller than a first grain size used in polishing the conductive polymer layer.
5. (Original) The method of claim 1, wherein baking the substrate is accomplished at a temperature in a range of approximately 70C-120C.

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6. (Original) The method of claim 1, wherein stripping the plural molds is accomplished using a resist remover.

7. (Original) The method of claim 1, wherein the temperature curing is accomplished at a temperature in the range of approximately 190C-230C.

8. (Original) The method of claim 1, wherein the temperature curing is accomplished at a temperature of approximately 190C for about 30 minutes.

9. (Original) The method of claim 1, wherein the temperature curing is accomplished at a temperature equal to or greater than a glass transition temperature of the conductive polymer.

10. (Original) A method for fabricating a flip-chip semiconductor device having high aspect ratio plural conductive polymer bumps thereon, the method comprising: forming plural molds on a substrate using a photolithographic technique; filling the molds by spinning a layer of conductive polymer material onto the substrate; polishing the conductive polymer material layer to remove excess conductive material from a surface of the substrate; and exposing the plural conductive polymer bumps by removing the plural molds from the substrate.

11. (Withdrawn) An integrated semiconductor package produced by the method of any one of claims 1-10, the package comprising a plurality of conductive polymer bumps electrically connected to respective under bump metallization contacts, wherein the under bump metallization contacts are operatively connected to a semiconductor device.